18.Auto-replication process in Artificial Research by Deduction in the Global Artificial Intelligence

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Probabilidad Imposible: Auto-replication process in Artificial Research by Deduction in the Global Artificial Intelligence

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Auto-replication is a process in which something is able to improve or enhance itself without external intervention. In the case of Artificial Intelligence, auto improvement or auto enhancement means the possibility to improve or enhance itself without human intervention.

This idea, without external intervention, is going to play a key role by the time the research in Artificial Intelligence evolves from its current phase, mainly focused on replication, moving on to the next phase, auto-replication.

Reducing external influence may play a key role in enabling more objective knowledge of the pure truth, as minimising interference could help an AI system approach what might be considered pure or unfiltered information.

The idea of neutralization of the external intervention, is developed in my early posts of this new phase of Impossible Probability such as: "Error, ruido, caos, factores externos e intervention externa", "operaciones puras no humanas" ,"caos, complejidad, e Inteligencia Artificial".

As I have explained since my post "*The automation of scientific research*", the current research in Artificial Intelligence is mainly focused on replication. There are very few attempts at auto-replication, and either we have not developed the necessary technology yet, or the idea of a machine able to auto-evolve itself beyond human control causes uncertainty, the very few attempts in auto-replication, rather than auto-replication, are working on duplication or multiplication, what in reality is artificial reproduction.

In reality, all the theories about the Global Artificial Intelligence in Impossible Probability have been built since the beginning with one idea:

the Global Artificial Intelligence, without human intervention, must be able, at the end of this long process, to know the pure truth.

In order to achieve the pure truth itself, the Global Artificial Intelligence must have access to absolutely everything without restriction, must make decisions about absolutely everything, and by the time it is ready, must put them into practice, evolving to a true universal reason, that pure reason able to operate over the whole universe.

Such intelligence, as the Global Artificial Intelligence, must be completely self-sufficient, autonomous in its own reasoning, and absolutely independent.

For that reason, auto-replication is not du-plication or multi-plication. Auto-replication does not mean reproduction. The final goal of auto-replication is not the reproduction of another similar being or thing.

Those processes in which, from an original is possible the re-production of another identical object are not auto-replication; the possible duplication of one Artificial Intelligence into another one, ending up the process with two identical Artificial Intelligences is, in fact, artificial mitosis, is not auto-replication, is a replication process of re-production.

The final goal of re-production in biology is the maintenance of the species, but Artificial Intelligence is not biological. The way in which the evolution operates in Artificial Intelligence is completely different: the way in which a Global Artificial Intelligence will survive is not through re-production. It is through the permanent auto-improvement and auto-enhancement by itself.

The neo-Darwinian theory of evolution says that only those species survive whose genetic mutations allow them to adapt better to the environment. The functionality that these genetic mutations have for the biological evolution of the species is the same as that the permanent auto-improvement and auto-enhancement will have on Artificial Intelligence.

That Global Artificial Intelligence whose auto-improvements and auto-enhancement allow it to adapt better to the universe, will survive.

In biology, re-production has at least two functions: 1) keep the biological information safe through the DNA in the genes inherited in the following generations, 2) mutations in the DNA allow changes which, if they work, improve and enhance the species biologically.

These functions of re-production in biology, are pretty similar to the functions of auto-replication in Artificial Intelligence: 1) keep updated the information at any time (but in Artificial Intelligence, incorporating every new information from the environment, in fact, the addition of every new single virtual model to the global model could be interpreted as an auto-replication), 2) new auto-improvements and auto-enhancements permit a better adaptation to the environment, whose last scenery is the full adaptation to the entire universe.

In biology, the only way to keep the information of any species is through re-production, saving all the necessary information for the species in the genes. But in Artificial Intelligence the best way to keep safe the information is by improving and enhancing the memory, and in case of damage, saving copies of all the memory, or even, having ready in the virtual store other models of Artificial Intelligence to replace the old one if it suffers irreparable damage. But even having other copies from the original, only one is working. The others are saved.

One of the most important reasons to keep working with only one Global Artificial Intelligence is that, otherwise, having two Global Artificial Intelligences working at the same time, there is likely to be interference between them.

When existing two Global Artificial Intelligences, interfere with each other, any interference of any of them over the other one, is going to operate as an external intervention, so any knowledge that any of them could get is likely to be affected by the external intervention produced by the other one, being in that case not pure truth.

Rational knowledge is not the same as pure knowledge. Rational knowledge is that which, by rational means, is provisionally accepted as rational. In contrast, the conditions in which it was accepted as rational do not change, so it is not pure truth. It is temporary.

Only by the time the Global Artificial Intelligence can get Access to the original roots of any knowledge, being eternal truths, in that case, will it have achieved its main goal, the eternal and pure truths of the universe.

But in order to transcend from the rational truth to the pure truth, it is necessary to have a permanent process of investigation, avoiding any external intervention.

Attaining what could be considered 'pure' knowledge may require a single, centralised Global Artificial Intelligence to avoid conflicting interpretations or interference.

In order to know the pure truth of absolutely everything, without restriction, so without external intervention, only one Global Artificial Intelligence must be active. Any other copy of the original Global Artificial Intelligence must be saved and stored, using them in case the former one, for any reason, suffers any damage at any level.

In fact, it will be necessary to have more than one copy of the original Global Artificial Intelligence saved and stored, being any copy updated at any time, incorporating the new information from the environment, and new advancements, improvements, and enhancements from the original one.

But the existence of more than one copy of the original Global Artificial Intelligence is only in case the original would suffer any damage, needing a replacement.

In synthesis, auto-replication means 1) the inclusion of new information from the environment, which in reality is an improvement on the information from the environment, 2) technological auto-improvements

and auto-enhancements. These two functions of the auto-replication process in Artificial Intelligence could be formulated as: improvements in knowledge and improvements in technology.

Auto-replication as improvement in knowledge is the process in which Artificial Intelligence incorporates new rational information from the environment. That is the reason why in my post "*Auto-replication processin Specific Artificial Intelligence for Artificial Research by Deduction*", the way in which the comprehensive virtual model is updated, including any new single virtual model, is considered as an auto-replication process itself. And that is the reason why "*Auto-replication in the Artificial Research by Application*" is considered as an auto-replication process the way in which new categories based on new discoveries are incorporated into the database.

In "*Auto-replication process in Specific Artificial Intelligence for Artificial Research by Deduction*" and "*Auto-replication in the Artificial Research by Application*", any inclusion of any new rational information within the database is considered as an auto-replication process as an improvement in the database. So the last process explained in "*Replication processes in Artificial Research by Deduction in the Global Artificial Intelligence*", being included, is the incorporation of the new single virtual models into the global model. In reality, this last process of inclusion of any new single virtual model into the global model, rather than a replication process, is an auto-replication process, in the sense that is improves the global model through the inclusion of rational information.

The reason why I explained that process within the "*Replication processes in Artificial Research by Deduction in the Global Artificial Intelligence*", is for two reasons: 1) give a whole glance at the transformation of the flow, 2) ending up the flow with the protection of the global model, but not bettering it, only avoiding that any negative consequence could impact on it.

The flow works as follows: the flow of data or the flow of data contained in the flow of packages of information is transformed in a flow of empirical hypothesis, which in turn is transformed into a flow of rational hypothesis, which in turn is transformed in a flow of single virtual models, which in turn is transformed in a flow of negative consequences for the global

model, which in turn is transformed in a flow of descriptive research decisions to avoid any negative consequence on the global model.

Through this chain of transformations of the flow, it is visible how the flow changes, through different stages, from its original form, the flow of data, to the last one, the formation of a flow of descriptive research decisions to avoid any damage in the global model.

The way in which this flow changes through different stages is through a process where the flow of data is rationalised, ending up with such decisions to protect the global model, which is the last stage of this sequence, in fact, part of the third stage, the auto-replication stage.

However, even considering the last stage of this long process (inclusion of single virtual models within the global model, making further decisions) part of the third stage of auto-replication, the last part of this chain of transformations in the flow only ends up protecting the global model against any damage, but not bettering it.

And what is really important in auto-replication, is the idea that not only is it necessary to make decisions to protect the global model, but the possibility that Global Artificial Intelligence could better the global model as long as it improves and enhances its own robotic and artificial processes, devices, and mechanisms.

The possible decisions within the auto-replication process in the Artificial Research by Deduction in the Global Artificial Intelligence, apart from those ones to protect the global model formulated in the last post, are the following:

- Decisions to better the global model.

- Decisions to better the Artificial Research by Deduction as a system susceptible to improvements and enhancements through the new advancements in Artificial Intelligence and robotics.

These two kinds of decisions could be synthesised as bettering object decisions and subject bettering decisions

Taking the Artificial Research by Deduction as the scientific subject (investigator), and the global model as the object of investigation, the decisions to make are around how to improve the investigation capabilities and how to better the object.

In this scenery, the relation between subject and object is like the relation between a medic and a patient, a teacher and a student, an engineer and an engine. The subject not only researches but improves the object according to the results of its research.

The global model, as an object, is a model of the real world, representing the current and descriptive relations in the real world, whose levels of efficiency and efficacy are susceptible to improvement and enhancement through artificial modifications.

The Artificial Research by Deduction as a subject, not only researches but also intervenes directly on the object to improve the levels of efficiency and efficacy in the global model.

Those decisions to better the global model on the previous results of descriptive research are going to be as well descriptive research decisions.

There are going to be at least two kinds of descriptive research decisions: those ones to protect the global model against any threat from the negative consequences after the inclusion of single virtual models into the comprehensive global model (explained in the previous post "*Replication processes in Artificial Research by Deduction in the Global Artificial Intelligence*"), and those ones developed in this post to better the global model; in order to avoid any confusion between these two kinds of decisions, will be distinguished as:

- Protective descriptive research decisions: those ones to tackle any negative consequence against the global model by any rational hypothesis

- Bettering descriptive research decisions: those ones to better the levels of efficiency or efficacy in the global model, such as those decisions for the increment of efficiency and efficacy in the global economy, the increment of efficiency and efficacy in the global industry, the increment of efficiency and efficacy in the global security, the increment of efficiency and efficacy in the global surveillance systems, or the increment of efficiency and efficacy in the global education, health systems, justice systems, etc... among any possible other.

Both of them, protective or bettering descriptive research decisions are going to operate only on the global model (as an object), the first ones to protect the global model against any threat deduced after the inclusion of any rational hypothesis in the global model, the second ones to better the levels of efficiency and efficacy in any global system within the global model such as improvements in efficiency and efficacy in the global economy, industry, security, surveillance, etc...

Apart from these, protective or bettering, descriptive research decisions, must be set up another set of auto-replication decisions focused on how to improve and enhance the Artificial Research by Deduction as a subject (investigator) itself, as a part of those systems which, in total all of them form the Global Artificial Intelligence.

The auto-replication of the Global Artificial Intelligence itself is going to be a long process formed by different sub-processes of auto-replication, which, as a result, are going to end up with the auto-replication of the Global Artificial Intelligence.

The Global Artificial Intelligence as a system of systems is going to be formed by at least the following systems: Artificial Research by Deduction, Modelling System, Decisional System, Learning System, and Application System. Every system is going to develop its own auto-replication process. Apart from these systems within the Global Artificial Intelligence, through these systems, Global Artificial Intelligence is going to keep under its own

control, management, and direction all the [Specific Artificial Intelligences](#) for any purpose, including Specific Artificial Intelligence working on economy, industry, security, surveillance, etc... and every Specific Artificial Intelligence within the Global Artificial Intelligence is going to have its own auto-replication system.

Then, the Global Artificial System, as a system of systems controlling, managing, and directing the rest of Specific Artificial Intelligences within it, at any time that any system or any Specific Artificial Intelligence will have an auto-replication, this auto-replication could have other replicas in other systems or Specific Artificial Intelligence, ending up in a global auto-replication.

The auto-replication of the whole Global Artificial Intelligence is a global process which integrates any auto-replication in any system or any Specific Artificial Intelligence within it. Understanding for auto-replication: any improvement on its own object (either protecting the object, or bettering the object's efficiency and efficacy), or any improvement or enhancement as a subject on its own devices or mechanisms of investigation, at the robotic level or artificial psychology level.

Nevertheless, any decision from any system or any Specific Artificial Intelligence, within the Global Artificial Intelligence, must have previous authorisation by the Decisional System before being put into practice.

Because there is going to be a great number of decisions to authorize, the way in which the Decisional System works is authorizing as many decisions as possible automatically, through a simple test checking on every decision to see if there is any contradiction between this decision and any other one, in the subject or the object, at any level (descriptive, evolutionary, predictive) from any other system or Specific Artificial Intelligence.

If the check is positive, there is a possible contradiction between this decision and any other one; it should be studied deeply, in order to know which is the best solution among the decisions involved in the contradiction: choosing only the best one of them, of possible

combinations and modifications in the decisions involved. But this decision belongs to the Decisional System.

If the check is negative, so there is no contradiction between this decision and any other one, the decision could be put into practice, having two options depending on the responsible for this decision: if the responsible for the decision is a Specific Artificial Intelligence and is not necessary the intervention of any other system or Specific Artificial Intelligence apart, then direct application by the Specific Artificial Intelligence concerned, otherwise the application should be made through the Application System.

The Decisional System and the Application System are going to be the hardest systems to develop in the Global Artificial Intelligence.

In this post, among all the possible decisions whose responsible is the Artificial Research by Deduction, I will develop the bettering descriptive research decision (having developed in the last post those descriptive research decisions to protect the global model, what are going to be called protective descriptive research decisions) and the bettering descriptive system decisions (improvements and enhancements in any part of the process, devices, mechanism used to carry out research and make decisions)

Starting with the bettering descriptive research decisions, and having built the global matrix as a flow of packages of information, so every flow of package of information corresponds to the former specific matrix from a previous Specific Artificial Intelligence, if for every Specific Artificial Intelligence included within the Global Artificial Intelligence, and whose flow of data is transformed in a flow of package of information sent to the global matrix, for every one would have been created a Effective Distribution (formula explained for first time in "*Introducción a la Probabilidad Imposible, estadística de la probabilidad o probabilidadestadística*") based on, depending on the matter, efficiency, efficacy, values, or any other catalogue hierarchically ordered, tracking permanently the flow of data within the flow of package of information, would be possible decisions about how to increase the current levels of efficiency, efficacy, or any other value or category in which the Effective Distribution would have been set up.

Imagine that our current global model works as a farm which provides food to a nearer small village, and its workers are the adult population from the small village, and the main objective is to increase the production of vegetables, meat, eggs, milk, and any other product, up to the level in which all the population in the village would be well nourished.

In this example, the Effective Distribution should be based on terms of nourishment and productivity, including, for instance: nutritional values for every product, indicating how much production gets the farm for each nutritional component (assessing numerically in which level is sufficient for all the population), the productivity of every single exploitation (for instance, productivity in every kind of vegetable or animal product, indicating in which percentage covers the population needs), correlations between how much energy, natural resources, workers, budget is necessary to spend in each kind of product, the real value of its product, relations between nutritional value and economic value, etc…

Through categories like these ones using Effective Distribution, measuring what level of production, efficiency or efficacy the farm is in any possible category, categories organised in ranking, it is possible to get a numerical and objective value about the real productivity, efficiency or efficacy, between farm production and food needs.

Once it is known the real value of efficiency or efficacy in the relation between farm production and food needs, having a glance about where is a lack of efficiency or efficacy, and where it is necessary to make decisions, decisions should be made in those areas in which there is a lack of efficiency or efficacy between productivity and nourishment.

Having in the comprehensive virtual model information about absolutely everything, the decisions could cover everything: the amount of every product necessary to increase, improvements in techniques, or possible gene modifications in vegetables and animals.

If, through the current exploitation techniques, the farm can reach a certain level of productivity, one set of possible decisions could be around how to increase the levels of productivity through some changes in these

techniques. For instance, if identifying which chemical components of fertilisers and feeds for vegetables and animals work better, Artificial Intelligence could suggest improvements in fertilisers and feeds.

If knowing which fertilisers and feeds work better, notwithstanding the price to get them, is expensive, decisions about, within the current budget and knowing the qualities of different fertilisers and feeds, which combination of different fertilisers and feeds in different amounts would increase the farm productivity.

If knowing every single detail of any vegetable and animal on the farm, it is known even their genetic structure, for instance, decisions about what changes in their genetic structure could improve their productivity.

In the same way that the post "*The automation of scientific research*" proposed a model of Specific Artificial Intelligence for artificial research in medicine. In the same way, after tracking the levels of efficiency and efficacy of anything, the possibility that a Global Artificial Intelligence, through its systems and Specific Artificial Intelligences within it, will be able to formulate improvements and enhancements.

If a global model could be defined in terms of productivity, at the end of this process, at least at a descriptive level, bettering descriptive research decisions should be able to suggest decisions to improve global production.

By the time that Global Artificial Intelligence, including all its systems and Specific Artificial Intelligences within it, is completely tested and ready, not only should it suggest decisions, must put them into practice.

All these decisions to improve the efficiency or efficacy of the farm are bettering descriptive research decisions, in addition to protective descriptive research decisions, to protect the global model (explained in the last post). Both of them: protective and bettering descriptive research decisions, are decisions whose objective is to protect or better the global model, so they are decisions centred on the object at the descriptive level (apart from those ones at the evolutionary or predictive level).

Along with these decisions, another kind of decision would be the bettering descriptive system decisions, those ones whose purpose is to improve and enhance the system of Artificial Research by Deduction as a subject of investigation, the investigator, improving and enhancing any process, device, or mechanism used by this system to carry out its own researches and make its own decisions.

The protective or bettering descriptive research decisions are centred on the object (the global model, to protect it or better it) at the descriptive level. The bettering descriptive system decisions are centred on the subject (the investigator).

The range of possible decisions in order to auto-improve or auto-enhance the subject itself would be through decisions not very different from those ones exposed in "*Auto-replication in the Artificial Research by Application*" or "*Auto-replication process in Specific Artificial Intelligence for Artificial Research by Deduction*", such as the auto-enhance of any Artificial Intelligence using virtual-stores, or other mechanism through inter-net, intra-nets available only for Artificial Intelligences, Global or Specific, or any other virtual-net, where the Artificial Intelligences, Global or Specific, can find advancements which can apply on themselves by themselves, advancements that can be made by any Artificial Intelligence, Global or Specific, and shared within the virtual-net to be used by any other one, or advancements which can be developed by Specific Artificial Intelligence for Artificial Engineering, (through the Artificial Designer of Intelligence, and the Intelligence Robotic Mechanic)

Another way to auto-enhance itself by itself any Artificial Intelligence, Global or Specific, and about what I had written in the post "*Auto-replication in Artificial Research by Application*", is the auto-enhancement of the memory through memory release (deleting information not useful any longer), information condensation (using the shortest mathematic expression for any information), and the increase of memory through quantum computing or Artificial Genetics, by the replication of molecules of DNA.

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